2017 Central Valley Flood Protection Plan Update

January 28, 2015

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Today's Discussion

Where We've Been

- Preliminary Basin-Wide Feasibility Study Approaches

Where We Are

- Introduction to Basin-Wide Feasibility Study Atlases

Where We're Going

- Summary of DWR's RFMP Phase 1 Content Review

Where We've Been

Preliminary Basin-Wide Feasibility Study Approaches

2017 CVFPP Update

Chapter 1 Context	Setting Historical Context
Chapter 2 Converging	Summary of Refinements and Areas of Alignment
Chapter 3 System Management	Strategies to Improve System Management
Chapter 4 Implementation Timing	Investment Approach
Chapter 5 Measuring Value	Tracking, Reporting of Investment Actions & Results

One Process, Many Activities

CVFPP Assessment

- BWFS System Performance Analysis
- RFMP Regional Visions and Priorities
- Conservation Strategy
- O&M
- Safety & Risk
- Climate Change
- Long-term Economic Consequences of Flooding
- USACE Feasibility Studies

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Basin-Wide Feasibility Study System Configurations

Chapter 2 Converging

Chapter 3 System Management

- Refine the State's vision for implementing SSIA
- Packages of structural and nonstructural actions
- Flexible to account for new information and changes in priorities or systemwide needs
- Technical evaluations ongoing
- Informed by regional priorities; will inform long-term financing and implementation strategies for the SSIA and the 2017 CVFPP Update

Preliminary Basin-Wide Feasibility Study Approaches

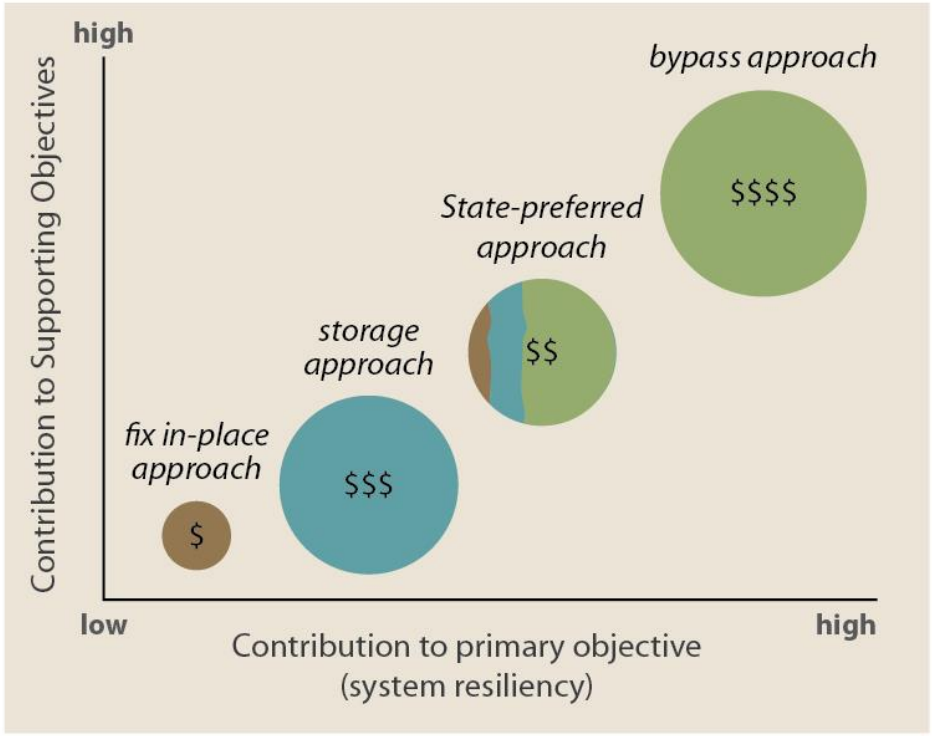
Sacramento River Basin

- Fix in Place Approach
- Build Storage to Store Peak Flood Flows Approach
- Expand and Extend Bypasses to Increase Conveyance Capacity of the Flood Management System Approach
- Combination of Balanced and Reasonable Actions in Above Approaches

San Joaquin River Basin

- Paradise Cut Bypass Approach
- Floodplain Transitory Storage Approach
- Raise and Fix-in-Place Levee Approach
- Upstream Storage Approach
- Combination of Balanced and Reasonable Actions in Above Approaches

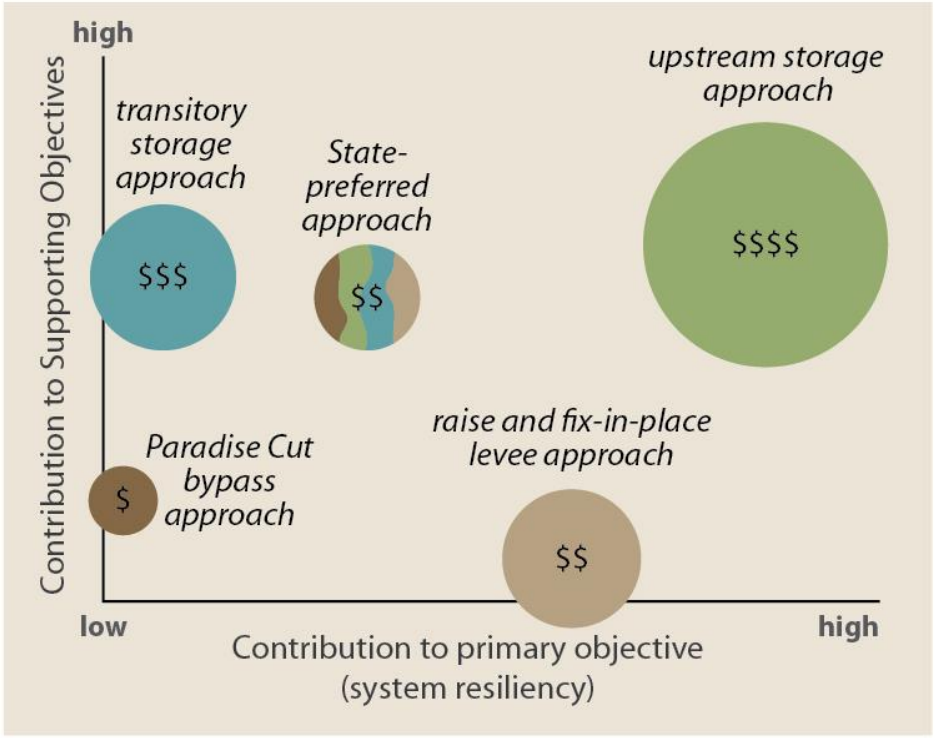
Identifying the State-Preferred Approach
Sacramento River Basin



Capital Investment vs. Benefits

Conceptual approaches for improving system resiliency in the Sacramento Basin

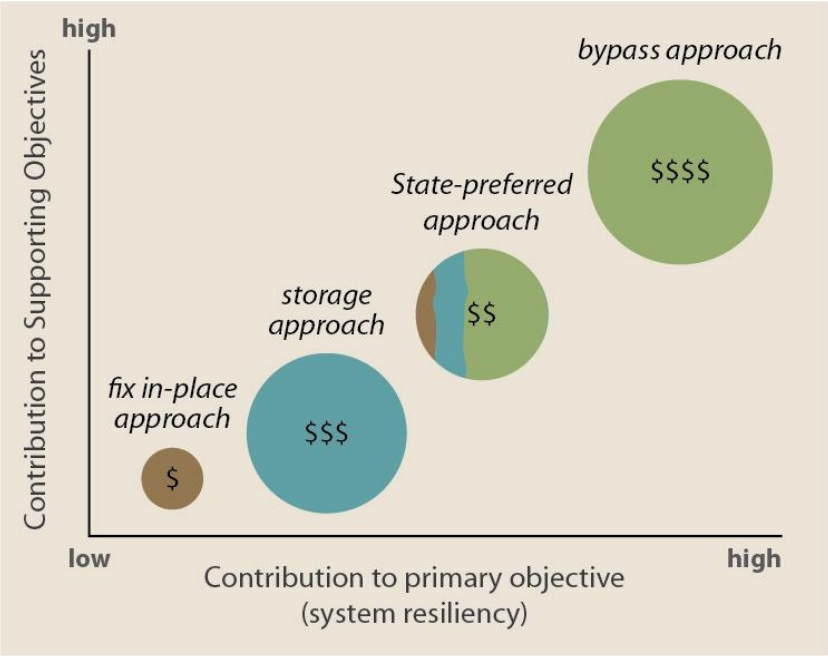
Identifying the State-Preferred Approach
San Joaquin River Basin



Capital Investment vs. Benefits

Conceptual approaches for improving system resiliency in the San Joaquin Basin

Identifying the State-Preferred Approaches



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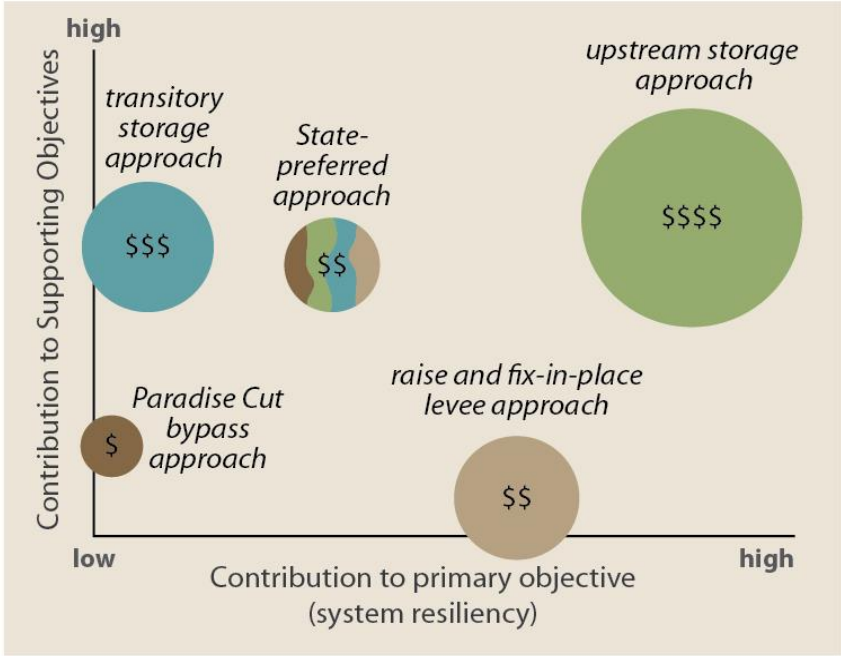


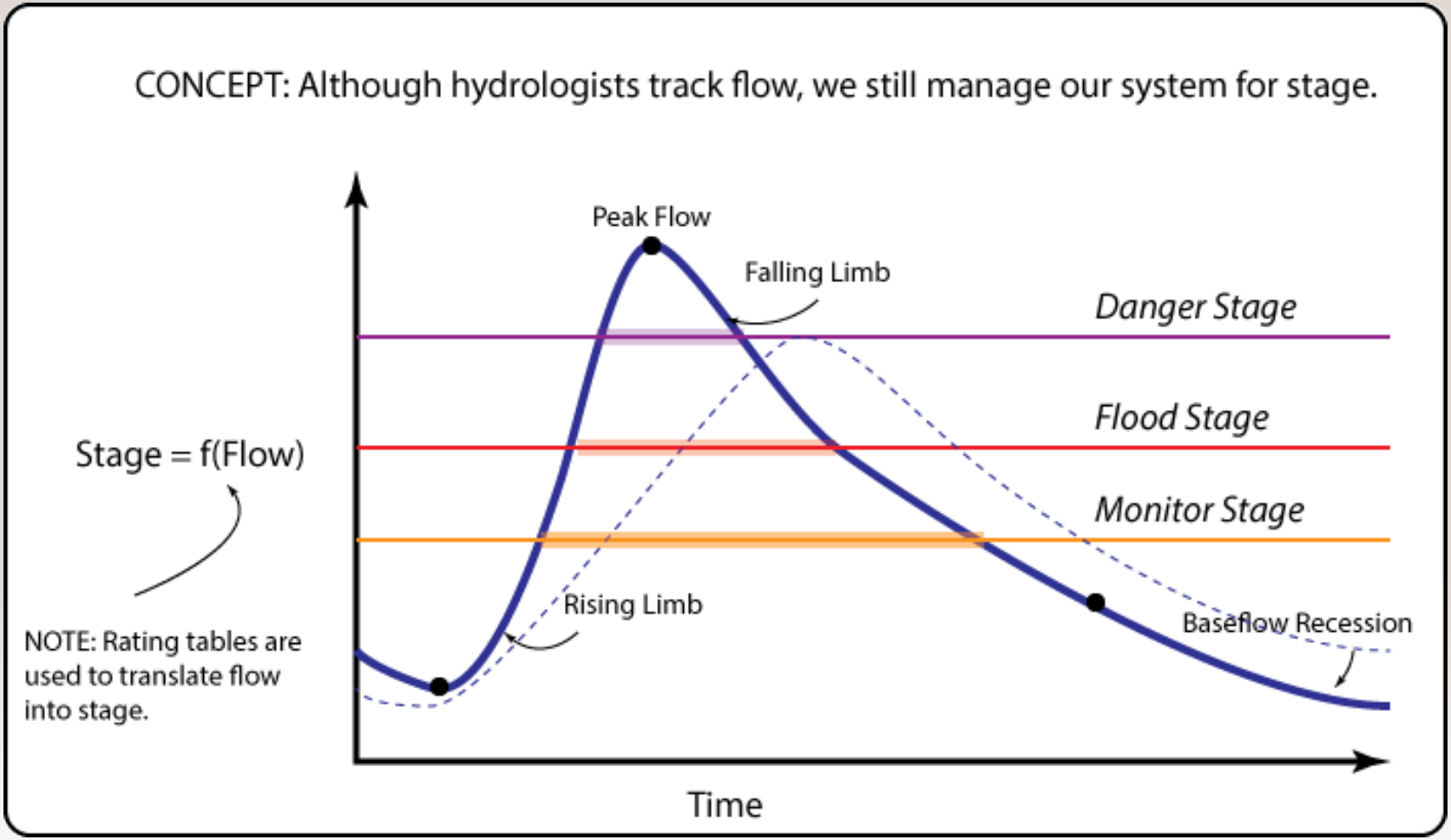
Capital Investment vs. Benefits
Conceptual approaches for improving system resiliency in the San Joaquin Basin

Where We Are

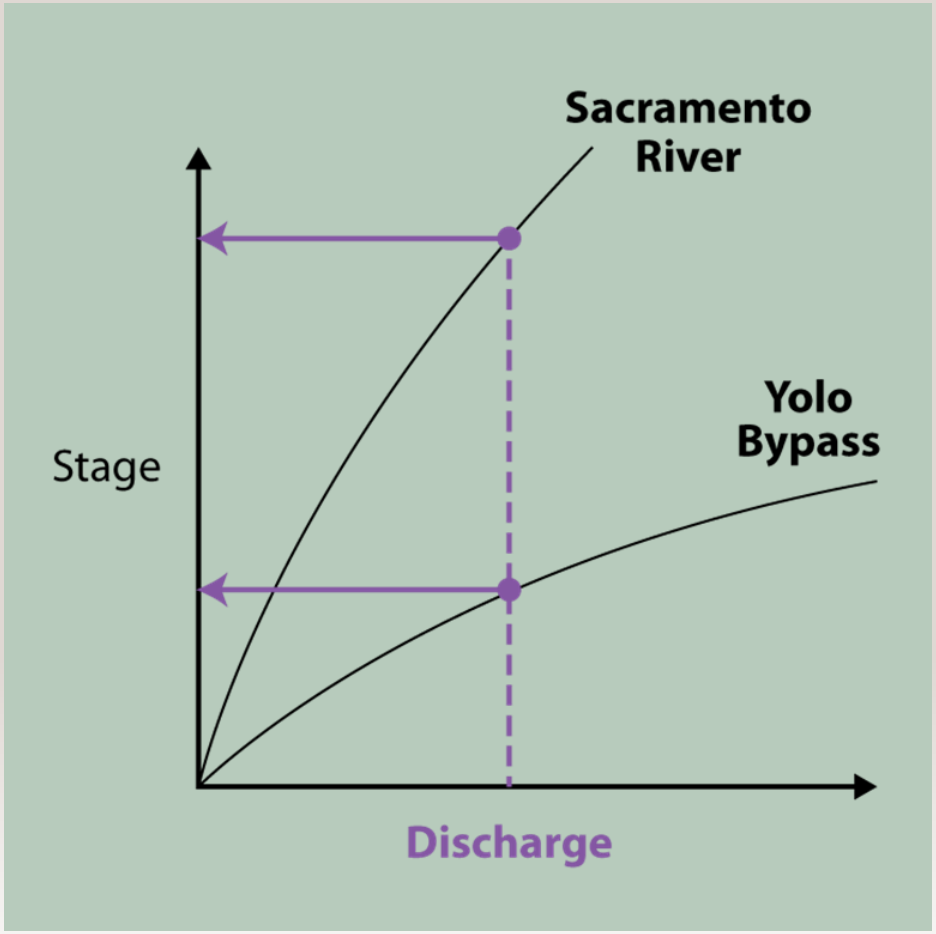
Introduction to Basin-Wide Feasibility Study Atlases

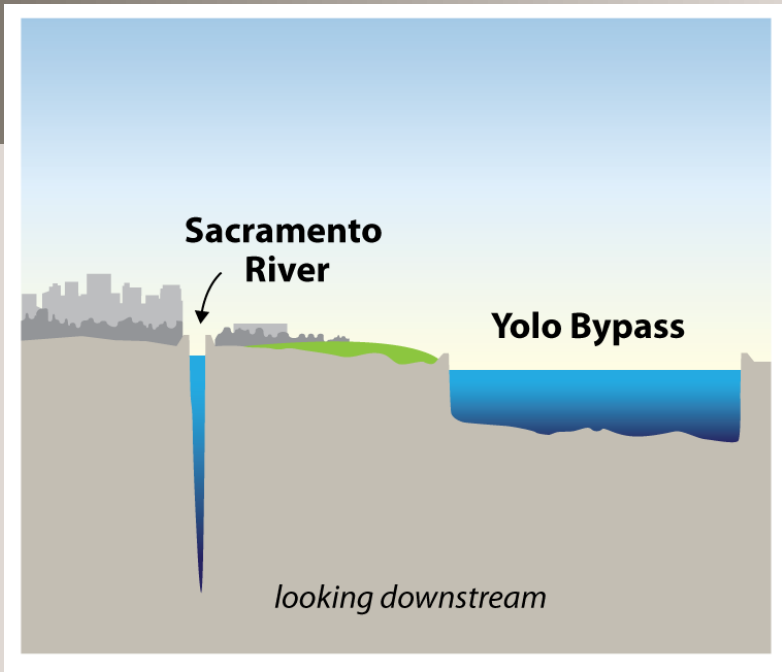
Managing for Stage

'Stage' is the elevation of flood water surface at any given location



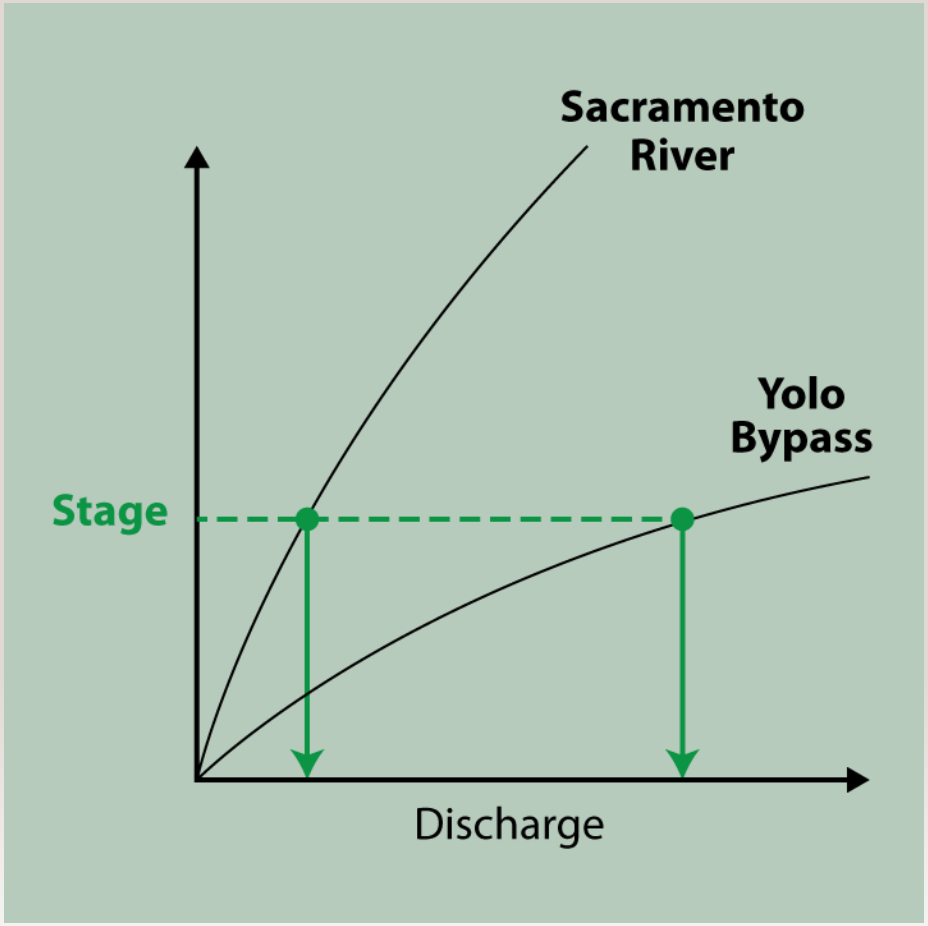
Understanding Stage-Discharge

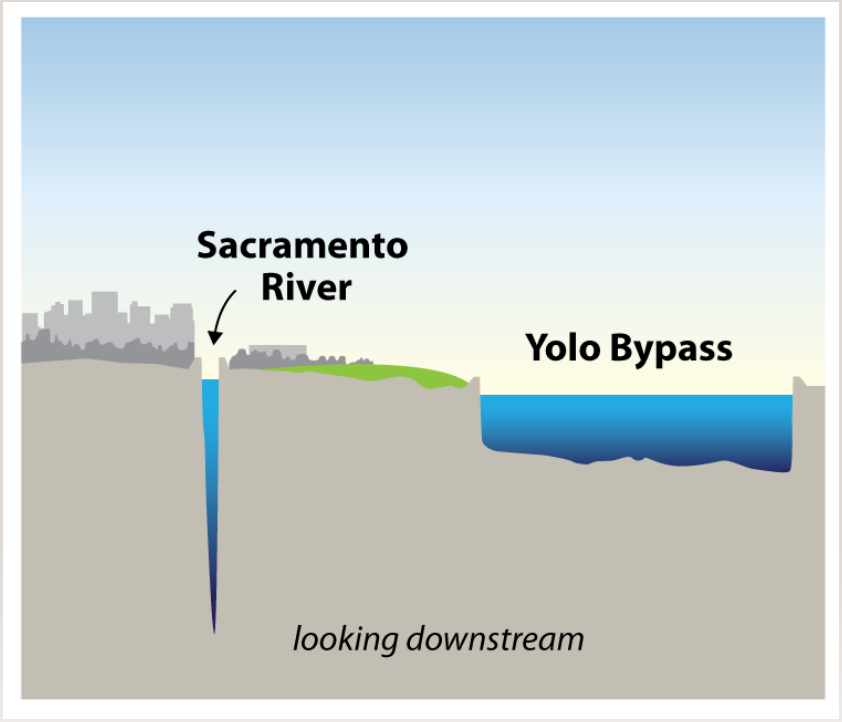




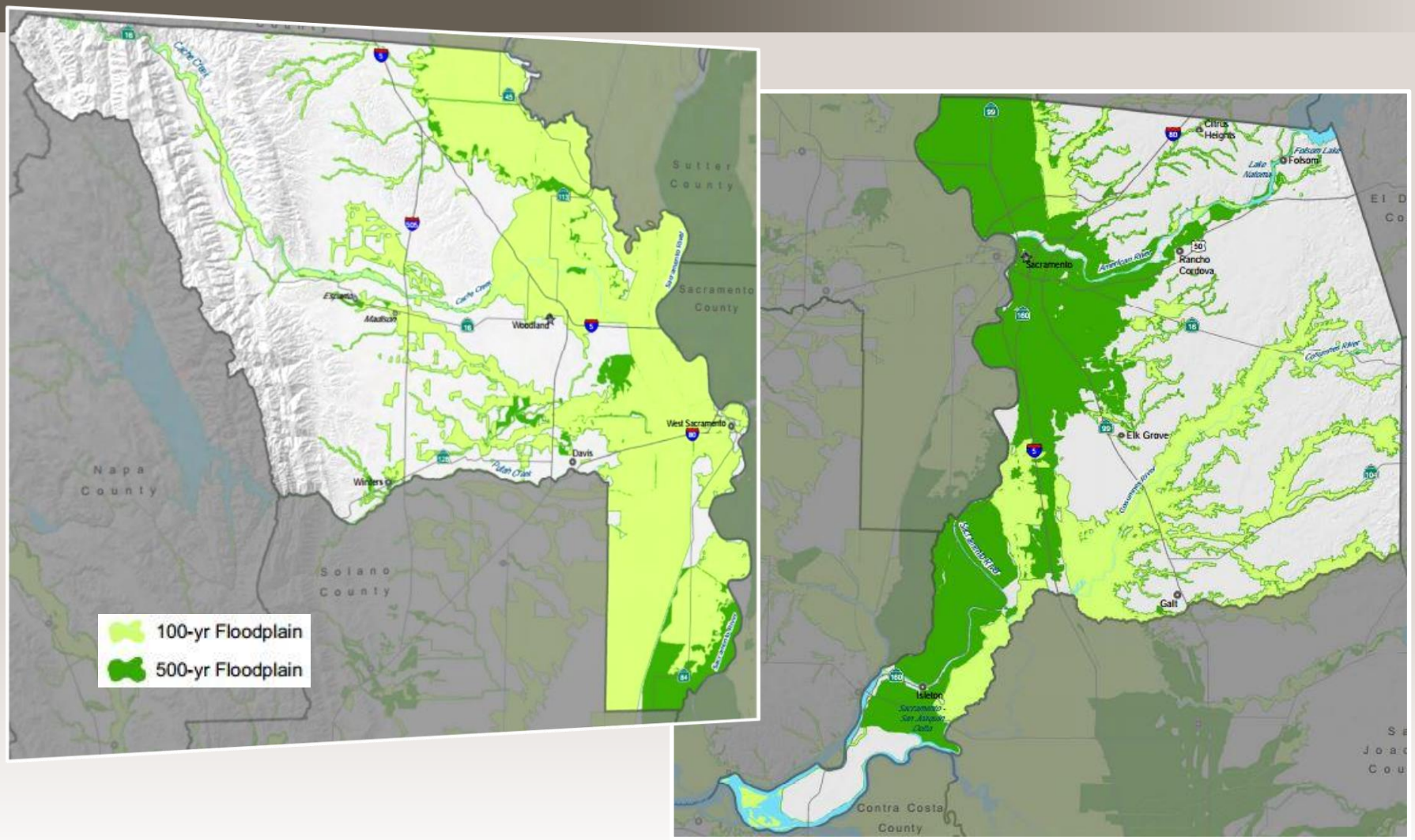
- Best metric for measuring and explaining flood risk
- The higher the water gets in a river, the more likely that flood waters will escape

Understanding Stage-Discharge





Inspiration for Basin-Wide Feasibility Study Atlases

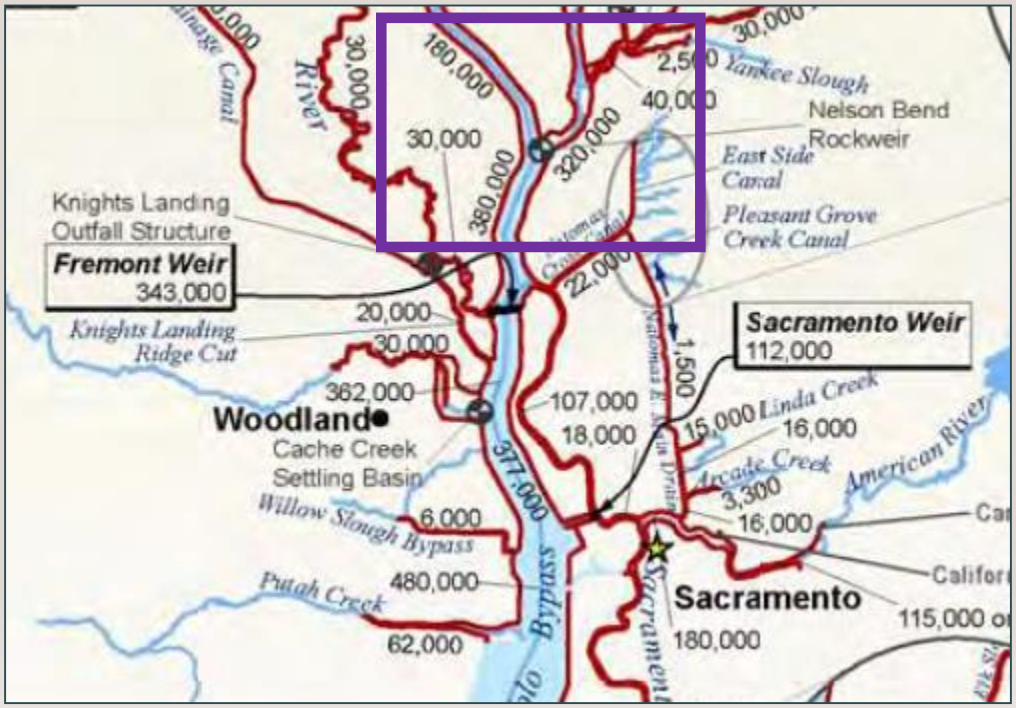


California's Flood Future Mapbook, Yolo and Sacramento Counties

What are Basin-Wide Feasibility Study Atlases?

- Living documents linking system performance to geospatial data
- Tools to identify a range of maximum flows that can be safely conveyed through each of the State Plan of Flood Control bypass systems
- Estimate 100- and 200-year peak flows
  - Using the Central Valley Hydrology Study (CVHS) hydrology, without climate change
  - Results compared to USACE 1957 design flows and design profiles
- Demonstrate potential performance of system based on key assumptions and initial configurations

Why Do We Need Atlases?



- California's current flood system design based on limited experience
- No consideration of rise/recession of water levels
- We owe it to future generations to consider how flood water rises and falls throughout the system
- Must account for climate change when planning to manage future flood events

Multiple Atlas Volumes Planned

Sacramento River Basin

Volume 1: Lower Sacramento River

- Chapter 1 – Yolo Bypass, Cache Creek, Willow Slough Bypass, DWSC
- Chapter 2 – American River
- Chapter 3 – Sacramento River below Fremont Weir

Volume 2: Mid-Upper Sacramento River/Feather River Region

- Chapter 4 – Sacramento River above Fremont Weir
- Chapter 5 – Sutter Bypass
- Chapter 6 – Feather, Yuba and Bear Rivers, inclusive of SPFC Tributaries

San Joaquin River Basin

- To be determined, Spring 2015

Volume 1: Lower Sacramento River

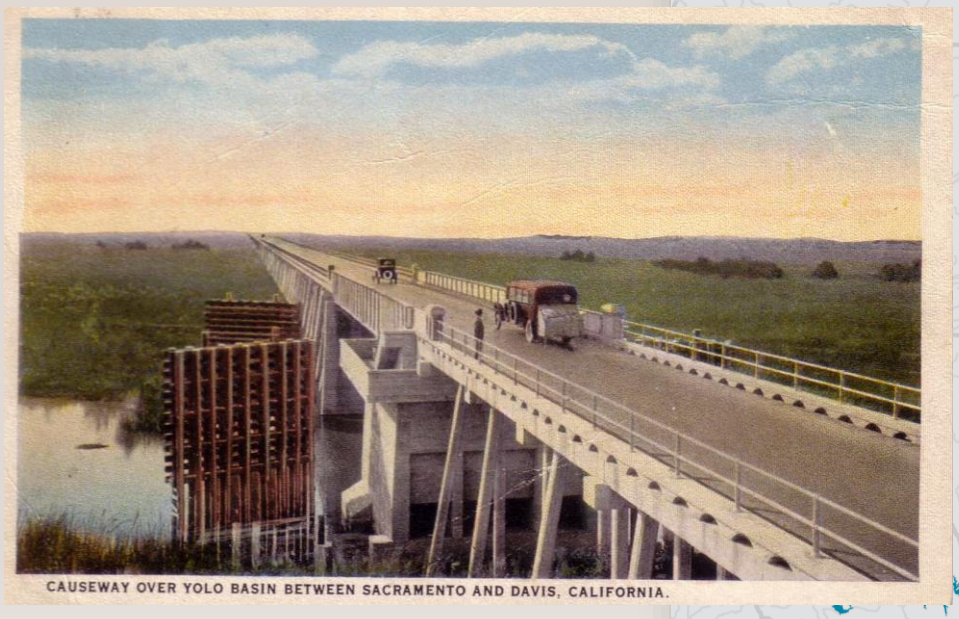
- **LS1: Communities and Critical Facilities**
  Cities and Small Communities protected by the levees, essential facilities and transportation facilities

- **LS2: Water Resources Facilities and Waterways**
  Streams with SPFC levees, non-SPFC levees, waterways, stream gages, bridges, weirs

- **LS3: Maintenance Responsibilities**
  Designates where DWR and where LMAs are obligated to maintain levees and channels

- **LS4: USACE Design Flow Capacities and Current Performance**
  USACE 1957 design flows and design profile, as well as current channel flow carrying capacity displayed

Volume 1, Chapter 1 - Yolo Bypass


CAUSEWAY OVER YOLO BASIN BETWEEN SACRAMENTO AND DAVIS, CALIFORNIA.

The Yolo Bypass

- Part of the Sacramento River
- Critical link to managing California's Water Resources
- A multi-purpose landscape designed and managed to provide a range of benefits:
  - public safety
  - economic stability
  - environmental sustainability

Proposed changes to the Yolo Bypass must:

- Safely address these benefits and significant flood events
- Consider the entire system – both downstream and upstream

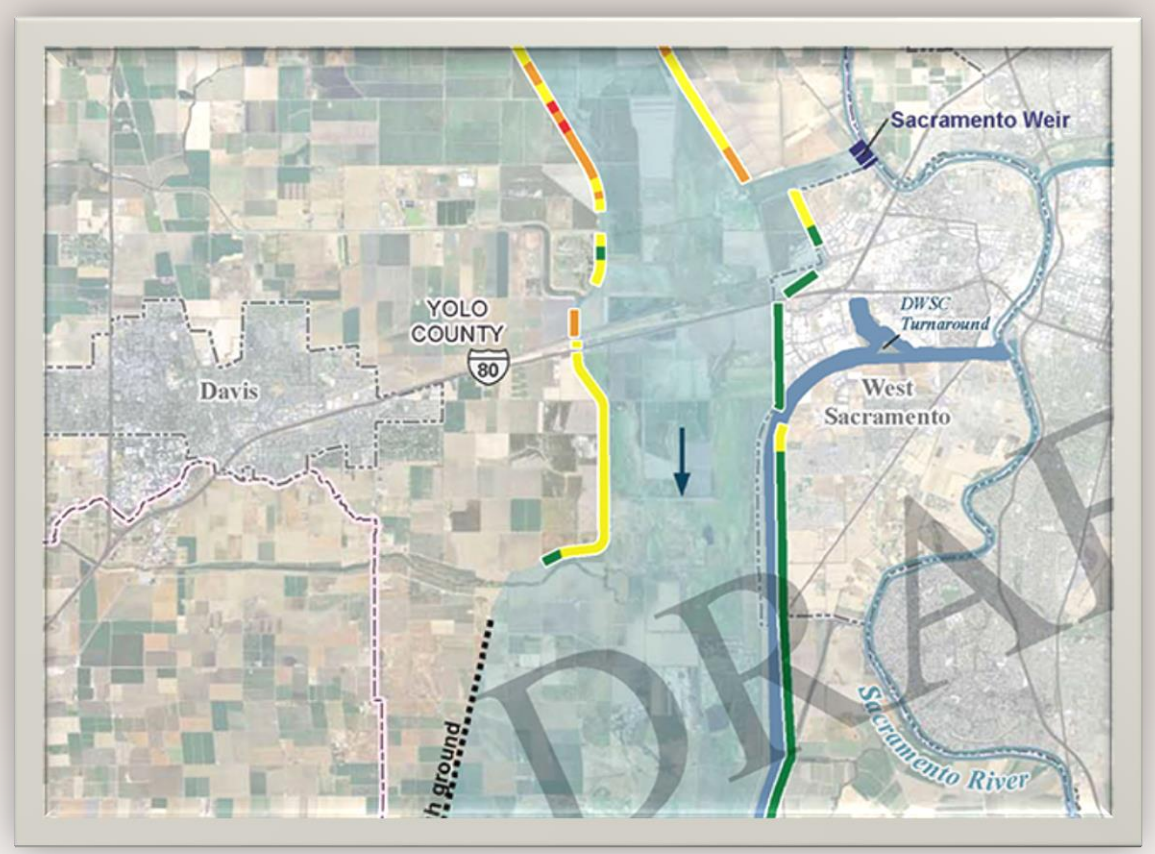
Yolo Bypass Performance: Assumptions

Scenario Assumptions	(A) 100-yr Flood Flows	(B) 200-yr Flood Flows	(C) 100-yr Flood Flows w/ Near-Term Conditions
Upstream Levee Performance	Hold water to 1957 DWSE	Hold water to 1957 DWSE	Hold water to 1957 DWSE
Downstream Boundary Condition	1997 Historical Tide Conditions	1997 Historical Tide Conditions	1997 Historical Tide Conditions
American River & Upstream Improvements	n/a	n/a	+30,000 cfs
Additional Yolo Bypass Habitat	n/a	n/a	+20,000 acres of ag land converted to habitat
Climate Change: Sea Level Rise	n/a	n/a	Not considered
Climate Change: Increased Upstream Runoff	n/a	n/a	Not considered

Looking at Yolo Bypass Performance:
100-yr Flood Flows

Assumptions

- Base model conditions with estimated 100-year water surface elevations using CVHS 1997 100% hydrology
- Downstream boundary condition assumed 1997 high tidal conditions

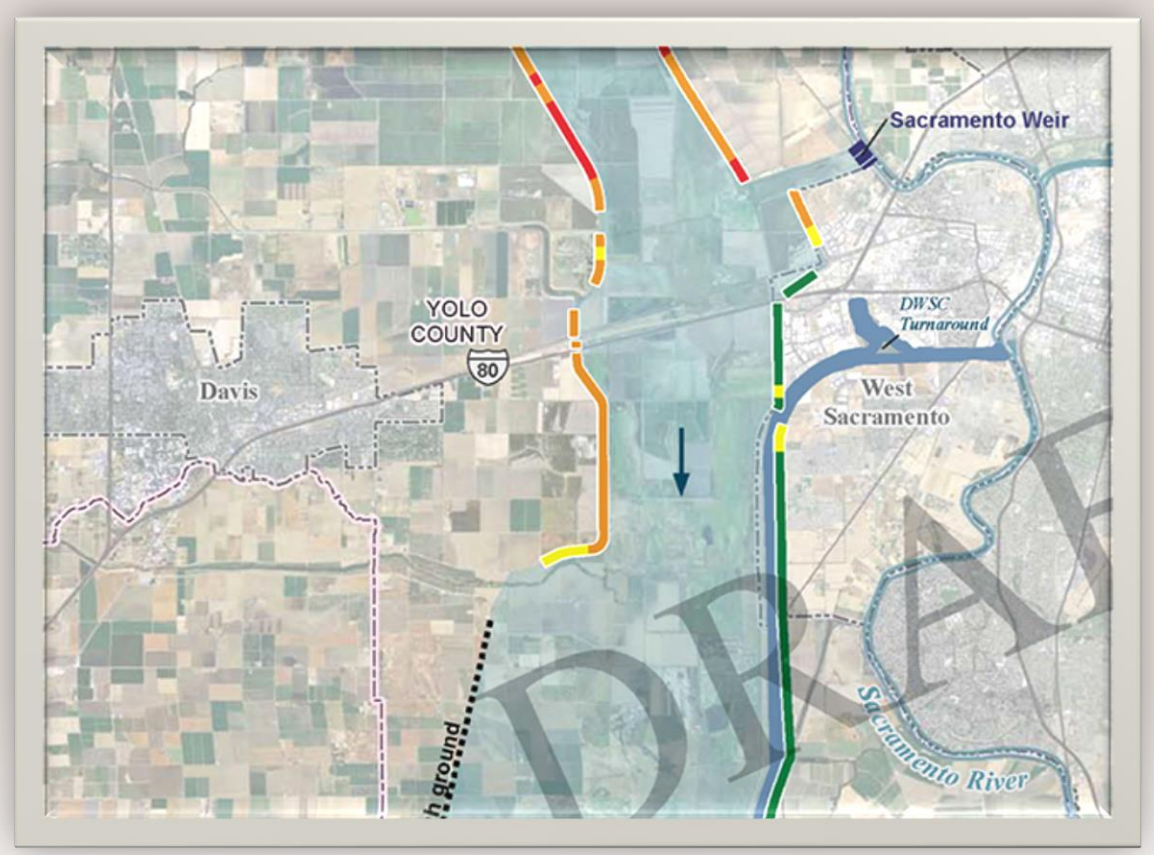


Atlas Map 1.1: Stage and freeboard deficiencies at approximate 100-year flood flows

Looking at Yolo Bypass Performance:
200-yr Flood Flows

Assumptions

- Base model conditions with estimated 200-year water surface elevations using CVHS 1997 120% hydrology
- Downstream boundary condition assumed high tidal conditions

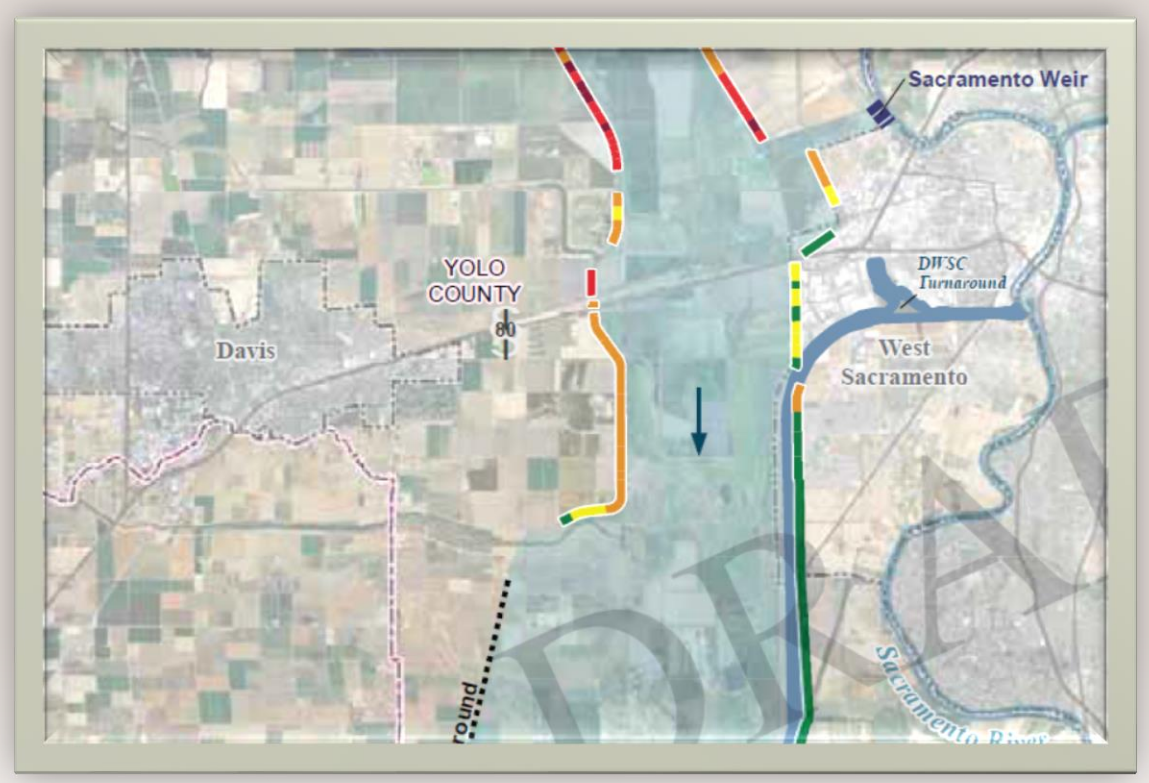


Atlas Map 1.2: Stage and freeboard deficiencies at 200-year flood flows

Looking at Yolo Bypass Performance:
100-yr Flood Flows / Near-Term Climate Change (2030)

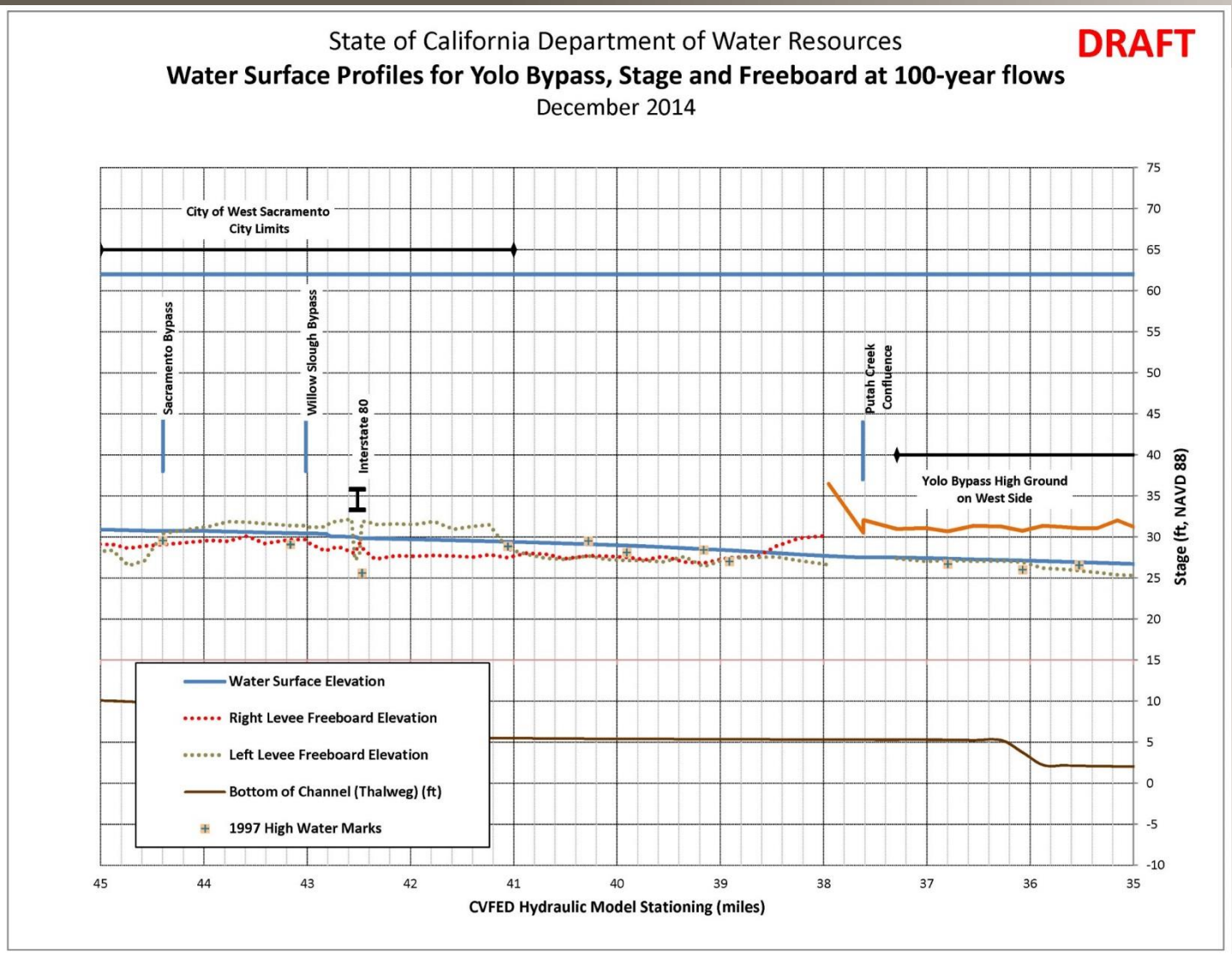
Assumptions

- Base model conditions with estimated 100-year water surface elevations using CVHS 1997 100+% hydrology
- Downstream boundary condition assumed 1997 high tidal conditions

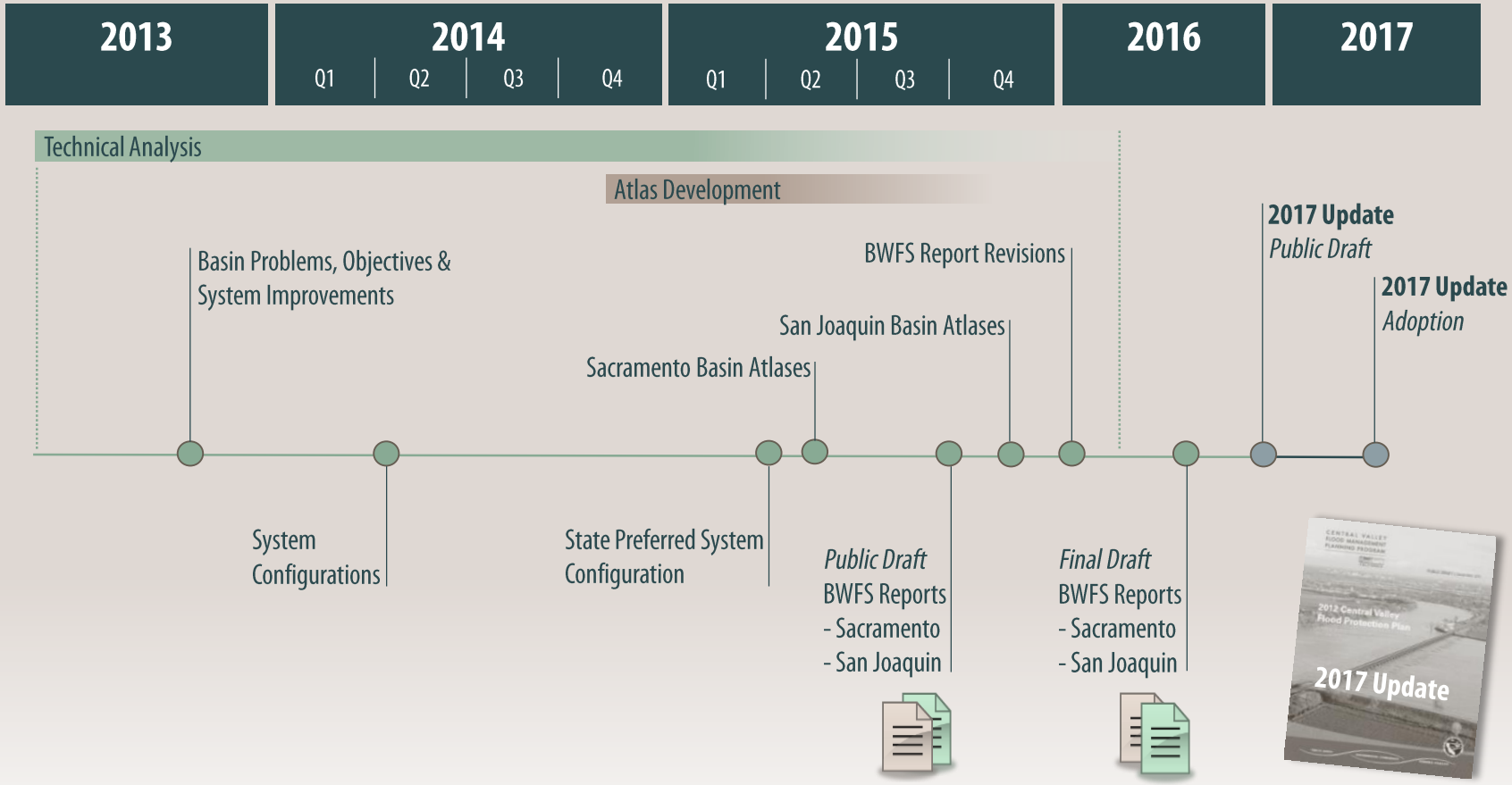


Atlas Map 1.3: Stage and freeboard deficiencies at approximate 100-year flood flows with near-term climate change adjustments

Additional Analyses



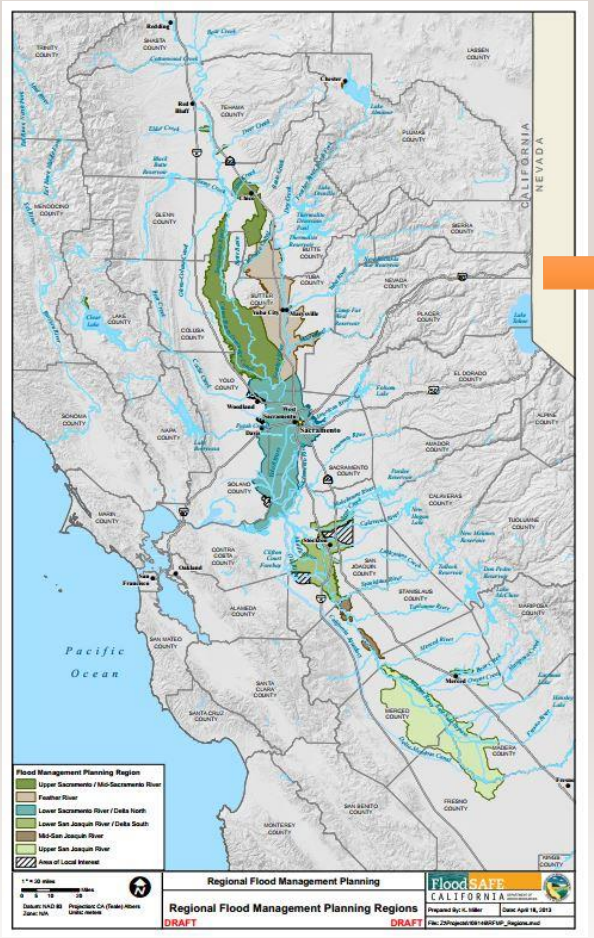
Where Are We in the BWFS Process?



Where We're Going

RFMP "Phase 1" Content Review

One Process, Many Activities



CVFPP Assessment

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Value of Regional Flood Management Planning

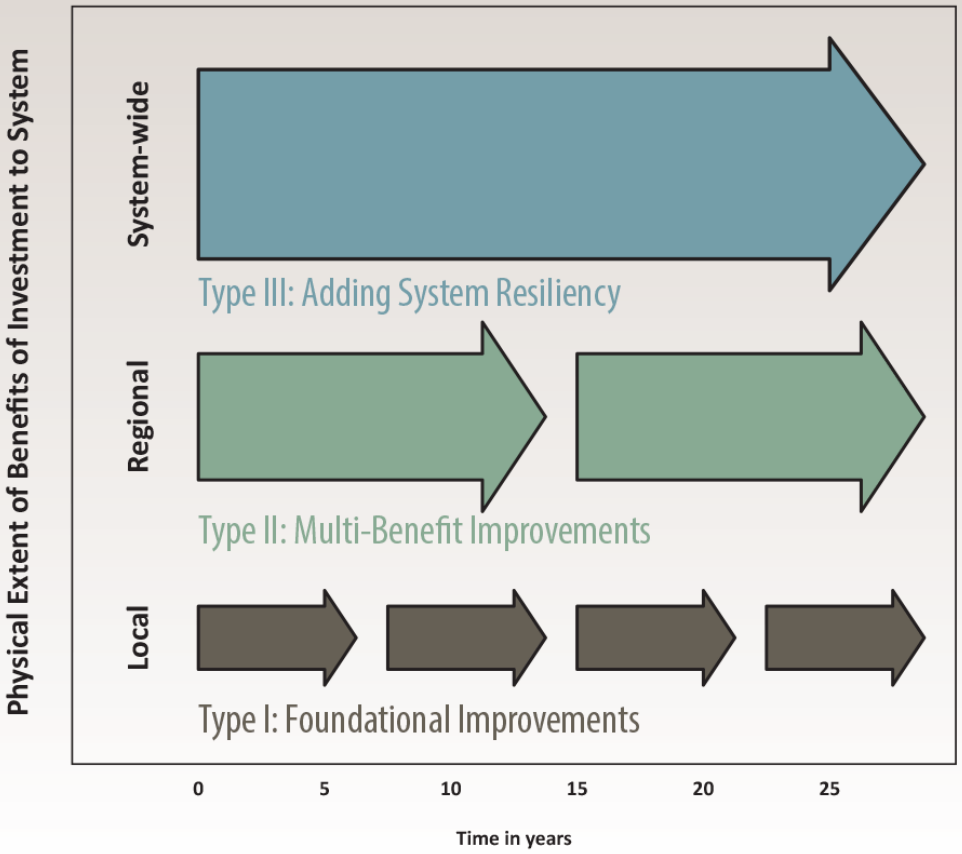
- Reviews technical assumptions used for BWFS/CVFPP studies
- Informs CVFPP Finance Plan (i.e., ability to pay, etc.) and FloodSAFE Implementation Program guidance criteria
- Improves coordination and engagement

DWR's Review of Regional Plans

What are we looking for?

- Consistency with scope of funding agreements
- Consistency with SSIA and CVFPP goals
- Specifics about proposed regional flood improvements, management actions and policy recommendations

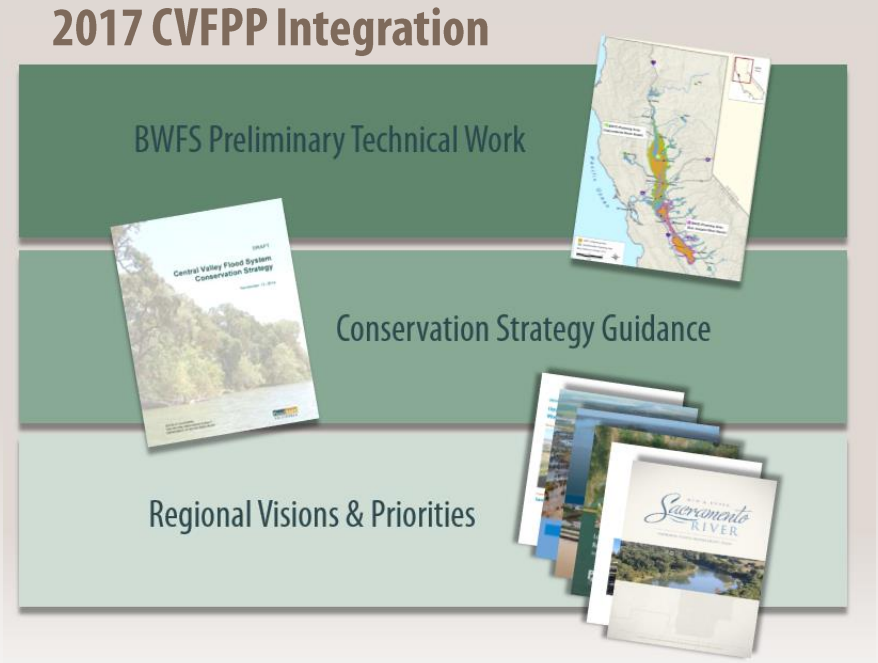
Continual Implementation



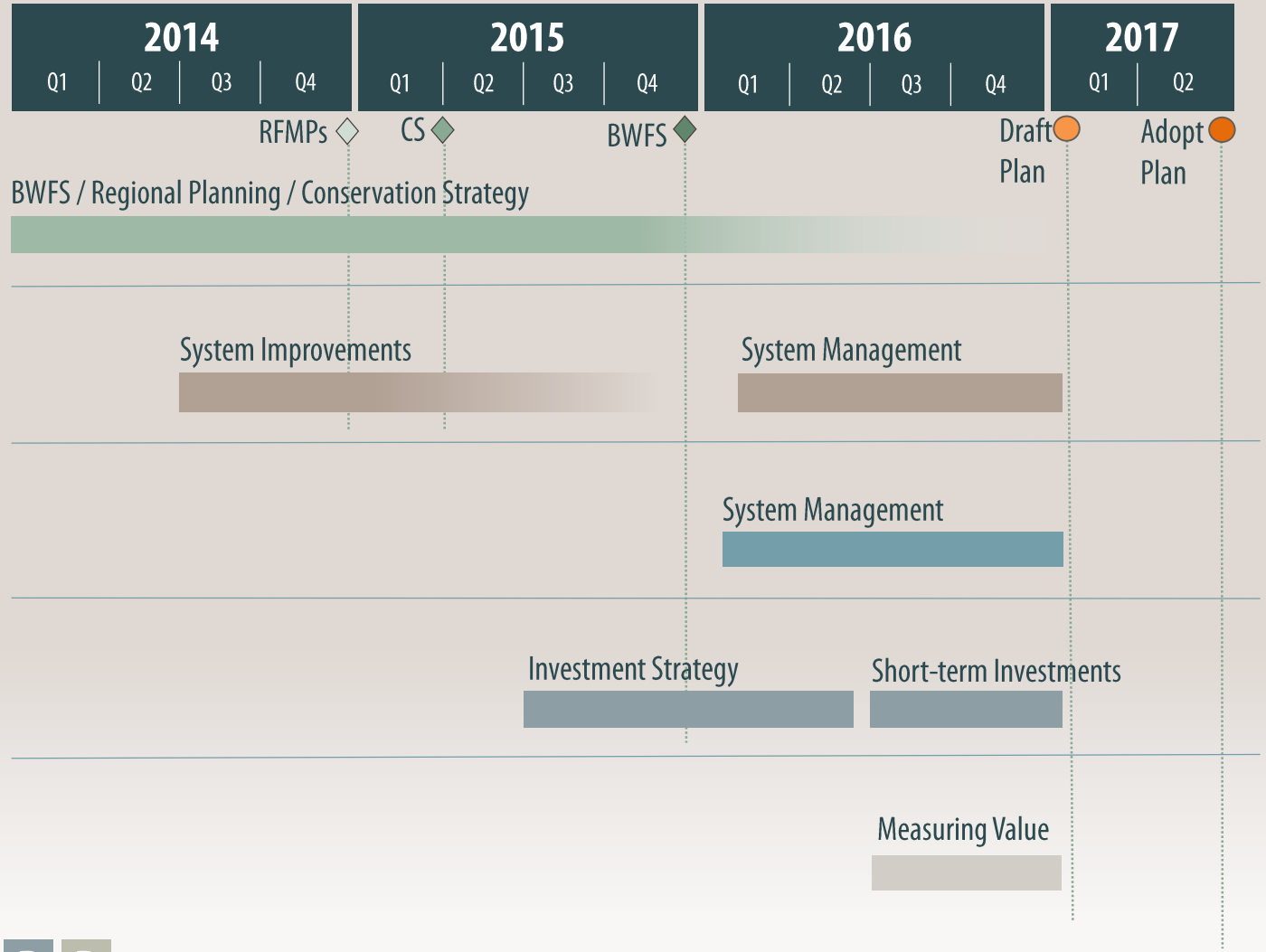
- 2017 CVFPP promotes progress on system, regional and local benefits concurrently
- RFMPs can inform investments for all three management action types

Next Steps: Regional Flood Management Planning

- February/March 2015 – Series of RFMP meetings with Lead Flood Planner
  - Discuss regional plans
  - View proposed project sites
  - See region "through your eyes"
- Ensure common understanding of regional challenges, opportunities and priorities
- Opportunities to discuss integration into 2017 Update and future planning



CVFPP Progression (as of January 2015)



Proposed Future CVFPP Updates

Regular CVFPP, Coordinating Committee and public updates planned:

Venue	Date	Proposed Topic
CVFPB Public Workshop	February 13, 2015	Conservation Strategy Review
Coordinating Committee Meeting	February 2015 (Date TBD)	CVFPP Update – Summary of DWR's RFMP Phase 1 Content Review
CVFPB Meeting	February 27, 2015	CVFPP Update – BWFS Preliminary Technical Work

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